Relatório de Resoluções

O código de cada membro pode ser consultado a seguir:

x_{05}: José Soares Jr.	x_{11}: Luca Monaco
x_{06}: Maurício Damião	x_{15}: Rodrigo Melendez
x_{08}: Pedro Lopes Silva	x_{18}: Matheus Cardoso
x_{09}: Rafael Maddalena	x_{20}: Gustavo Zequini

Resolução (‖ Questão: 4.5.1 ‖ Relator: $\mathbf{x}_{11}$ ‖ Revisor: $\mathbf{x}_{05}$ ‖)

1. The consumption function $C = 4141 + 0.78Y$ was estimated for the UK during the period 1949–1975. What is the marginal propensity to consume?

A propensão marginal ao consumo será igual a 0.78. ■

Resolução (‖ Questão: 4.5.2 ‖ Relator: $\mathbf{x}_{15}$ ‖ Revisor: $\mathbf{x}_{06}$ ‖)

Encontre o preço de equilíbrio para cada um ods modelos lineares de oferta e demanda:

a) $D = 75 - 3P$ e $S = 2P$

$D = S \iff 75 - 3P = 2P \implies 5P = 75 \implies P = 15$

b) $D = 100 - 0.5P$ e $S = -20 + 0.5P$

$D = S \iff 100 - 0.5P = -20 + 0.5P \implies P = 120$

■

Resolução (‖ Questão: 4.5.3 ‖ Relator: $\mathbf{x}_{18}$ ‖ Revisor: $\mathbf{x}_{08}$ ‖)

The total cost C of producing x units of some commodity is a linear function of x. Records show that on one occasion, 100 units were made at a total cost of \$200, and on another occasion, 150 units were made at a total cost of \$275. Express the linear equation for total cost C in terms of the number of units x produced.

Como o modelo requerido é linear pode-se dizer que $f(x) = ax + b$
O coeficiente linear será $a = \frac{y_1 - y_0}{x_1 - x_0} \Rightarrow a = \frac{150-100}{275-200} = \frac{3}{2}$
Fazendo $200 = 100 \cdot \frac{3}{2} + b \iff b = 100$, tal que $C = 100 + \frac{3x}{2}$
■

Resolução (‖ Questão: 4.5.4 ‖ Relator: $\mathbf{x}_{20}$ ‖ Revisor: $\mathbf{x}_{09}$ ‖) The expenditure of a household on consumer goods, C, is related to the household's income, y, in the following way: When the household's incomeis \$1000, the expenditure on consumer goods is \$900, and whenever income increases by \$100, the expenditure on consumer goods increases by \$80. Express the expenditure on consumer goods as a function of income, assuming a linear relationship.

Sendo o consumo $C = a.y + b$. E o coeficiente $a = \dfrac{80}{100}$.

$C = (1000 - 900) + \frac{80}{100}.y$
$C = 100 + 0,8.y$ ■

Resolução (‖ Questão: 4.5.5 ‖ Relator: $\mathbf{x}_{05}$ ‖ Revisor: $\mathbf{x}_{15}$ ‖)

For most assets such as cars, electronic goods, and furniture, the value decreases, or depreciates, each year. If the value of an asset is assumed to decrease by a fixed percentage of the original value each year, it is referred to as straight line depreciation.:

a) Suppose the value of a car which initially costs \$20.000 depreciates by 10% of its original value each year. Find a formula for its value $P(t)$ after t years.

$P(t) = 20000 - 20000 \cdot 0.1 \cdot t \Longrightarrow P(t) = 20000(1 - 0.1 \cdot t)$ ou $P(t) = 20000 - 2000t$

b) If a \$500 washing machine is completely depreciated after ten years (straight line depreciation), find a formula for its value $W(t)$ after t years.

Como a máquina de lavar deprecia totalmente em 10 anos, faremos $\frac{500}{10} = 50$, logo a depreciação é de \$50 ao ano

$\therefore\ W(t) = 500 - 50t$

■